ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE
7 - Operational system development	**0203752A - Aircraft Engine Component Improvement Program**

COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
106 A/C COMPON IMPROV PROG	461	331	792		1584

A. Mission Description and Budget Item Justification: Aircraft Engine Component Improvement Program (CIP) develops, tests, and qualifies improvements to aircraft engine components to correct service-revealed deficiencies, improve flight safety, enhance readiness and reduce operating and support (O&S) costs. In addition, CIP provides the test vehicles for the testing and qualification efforts required as a part of the Army's Flight Safety Parts program. CIP is included in the RDTE budget vice procurement appropriations in accordance with congressional direction. The majority of CIP funding has been reallocated to PE 273744 beginning in FY07. Non-program specific auxiliary power unit (APU) safety and readiness issue will continue to be addressed under this PE.

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B. Program Change Summary	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)			
Current BES/President's Budget (FY 2010)	461	331	792
Total Adjustments	461	331	792
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Adjustments to Budget Years			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
7 - Operational system development	**0203752A - Aircraft Engine Component Improvement Program**	**106**

COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	Cost to Complete	Total Cost
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Accomplishments/Planned Program:	FY 2008	FY 2009	FY 2010
T700 Engine: As of FY07, majority of funding for this program has been reallocated to PE 273744. Previously, this program addressed flight safety and readiness problems that arise in the field by providing timely engineering support, continued the development of the T700-GE-701D, provided engineering support of fielded engines to enhance war fighting capability and improve durability and reliability while reducing cost of ownership. Significant Accomplishments in FY 2008: Continued efforts to revise qualification reports on the 701D engine to increase flight safety, improve engine on-wing life, and reduce engine O&S costs. FY 2009 effort provides minimal support to resolve Flight Safety and Engineering issues. FY2010 effort will develop reliability improvements to the DECU to reduce high-side failure events and improve flight safety.	190	46	303
T55 Engine: Provide timely support to field users, applying engineering effort to resolve unanticipated flight safety problems revealed in the field. Continue the engineering support of fielded engines to enhance war-fighting capability, improve durability & reliability while reducing CH-47 engine cost of ownership.Significant accomplishments in FY2008: Continued efforts on the N2 Speed Sensor System to reduce amount of hardware O&S. Approved final report on the improved bleed activation system. Disapproved the ECP for the improved bleed system due to fabrication issues with the bracket. Completed the qualification efforts for the improved Engine Control Unit (ECU) for CH-47 D/F aircraft which will greatly improve control system reliability. Continued the MIL-STD-1553 ECU program which will incorporate MIL-STD-1553 databus capability in the new ECU and allow the ECU to communicate via the databus to the CH-47F aircraft. Continued work on the compressor blade erosion coating program to improve time-on-wing for engines operating in OEF/OIF environments. Program was canceled due to corrosion issues that could not be resolved. Continued a redesign of the T55 Torquemeter System to improved reliability and accuracy issues associated with T55-GA-714A output torque indication system. Initiated N1 drive line redesign efforts. This will bring the design up to current Honeywell design practices and improve system reliability. FY2009 and 2010: D106 funded efforts provide minimal support to resolve Flight Safety and Engineering issues.	80	26	303
GTCP36 Auxiliary Power Unit (APU): Provide timely responses to technical problems arising in the field during operational use. Review operational and repair reports, perform engineering analysis of failed engines and equipment. Perform investigation and testing as required to isolate/verify reported field problems and service revealed deficiencies (SRDs). Significant accomplishments in FY 2008: Developed new repairs and extend wear limits, new repair tools and techniques to reduce O&S costs. Conducted engineering analysis of service revealed deficiencies. FY 2009 and 2010: Address service revealed difficulties affecting safe operation of US Army GTCP 36	79	57	25

APUs. Formulate correlation factors necessary to publish life limits of turbine and compressor wheels for US Army GTCP36 APUs.			
T62 APU: Provide timely responses to technical problems arising in the field during operational use. Review operational and repair reports, perform engineering analysis of failed engines and equipment. Perform investigation and testing as required to isolate/verify reported field problems and service revealed deficiencies (SRDs). Significant accomplishments in FY 2008: Conducted engineering analysis of service revealed deficiencies. Continued redesign effort to increase reliability and maintainability of Flexible Fuel Mainfold for the T-62T-2B APU to improve reliability, improve safe operation, and reduce OS costs. Completed redesign of Flexible Fuel Manifold. Addressed service revealed difficulties affecting safe operation of US Army APUs. FY 2009 and 2010: Deliver two assembled Flex Fuel Manifolds to US Army for qualification testing and provide Class I Engineering Change Proposal (ECP), prepare drawing for T62-T-2B Fuel Pump/Fuel Control assembly, provide Ignition bracket design change for T-62T-40-1 Inlet Barrier Filter (IBF) to accommodate aircraft with Environmental Control System (ECS) installed, address SRDs affecting T-62 APUs.	60	100	35
UAV Shadow Engine Investigation at U.S. Army Research Laboratory (ARL) Cleveland: US Army Vehicle Technology Directorate (VTD) at ARL Cleveland. Provide research to support airworthiness, reliability and performance improvements of the Unmanned Aerial Vehicle (UAV) shadow engine. Investigate and research the technology challenges (i.e. engine performance, engine durability, engine life, and engine modifications) for reliable engine operation using JP-8 fuel and readily available MIL-spec lubricants. Significant accomplishments in FY2008: Constructed engine test cell, obtained, rebuilt and instrumented 2 engines for testing. FY 2009 and 2010: Complete and qualify engine test cell. Investigate and research improved oil pump and engine bearings to increase engine life and reduce engine failure due to lubrication restriction. Investigate and research thermal barrier coatings for rotor to improve engine performance, durability and reduce thermal affects due to combustion.	12	52	79
IN HOUSE: In-house support for the CIP engineers. Contracting support for CIP contracts.	40	45	47
SBIR/STTR Reduction		5	
Total	461	331	792

B. Other Program Funding Summary Not applicable for this item.

C. Acquisition Strategy Improved designs will be implemented via Engineering Change Proposal (ECP) and follow-on procurement or modification to a production contract to introduce the improved hardware.

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY
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PROJECT
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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
T700 Engine	SS/CPFF	GE-Air, Lynn, MA	60780	190	2Q	46	2Q	303	2Q	Cont.	Cont.	Cont.
T55 Engine	SS/CPFF	Honeywell, Phoenix, AZ	28391	80	2Q	26	2Q	303	2Q	Cont.	Cont.	Cont.
APU's	MIPR	Air Force, Kelly AFB, TX	13557								13557	13557
EDECU	SS/CPFF	GE-Air, Lynn, MA	774								774	
FADEC/FDU	MIPR	CECOM, Ft. Monmouth, NJ	12895									5716
APU's	MIPR	Air Force, Hill AFB, UT	1963	139	3Q	157	3Q	60	3Q	Cont.	Cont.	Cont.
LOLA	MIPR	CECOM, Ft. Monmouth, NJ	938								938	
UAV Shadow Engine	MIPR	ARL/VTD, Cleveland, OH		12	4Q	52	3Q	79	3Q		143	
Subtotal:			119298	421		281		745		Cont.	Cont.	Cont.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contract Engineering	SS/CPFF	Westar, St. Louis, MO	10								10	10
Contract Engineering	SS/CPFF	Camber, Huntsville, AL	199								199	199
Contract Engineering	SS/CPFF	AMS, Huntsville, AL	107								107	107
Contract Engineering	SS/CPFF	Westar, Albuquerque, NM	30								30	
Subtotal:			346								346	316

III. Test And Evaluation	Contract	Performing Activity &	Total	FY 2008	FY 2008	FY 2009	FY 2009	FY 2010	FY 2010	Cost To	Total	Target

ARMY RDT&E COST ANALYSIS (R3)

May 2009

BUDGET ACTIVITY
7 - Operational system development

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	Method & Type	Location	PYs Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Complete	Cost	Value of Contract
Redstone Avn Prop Test Res (RAPTR) Facility Data Reduction Prog	MIPR	Redstone Technical Test Center, RSA, AL	946								946	Cont.
Subtotal:			946								946	Cont.

Remarks: Not Applicable

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost To Complete	Total Cost	Target Value of Contract
In-house Engineering		ATCOM, St. Louis, MO	10342								10342	10342
In-house Engineering	NA	AMRDEC Redstone Arsenal, AL	1977	40	1-4Q	45	1-4Q	47	1-4Q	Cont.	Cont.	Cont.
DA Withhold			140								140	
Prior Year Closed Account Funding			5								5	
SBIR/STTR			171			5					176	
Subtotal:			12635	40		50		47		Cont.	Cont.	Cont.
Project Total Cost:			**133225**	**461**		**331**		**792**		**Cont.**	**Cont.**	**Cont.**